REMARKS

Claims 16-276 are now pending in this application. Claims 16, 20, 23, 25, and 27 are independent. Claims 16, 19, 20, 23, and 24 have been amended. No claims have been canceled, and claims 25-27 have been added by this amendment.

No new matter is involved with any new claim or claim amendment.

Anticipation Rejection Over Kleewein (US 5,903,893)

Withdrawal of the rejection of claims 16 and 17 under 35 U.S.C. §102(a) as being anticipated by Kleewein (US 5,903,893) is requested.

At the outset, Kleewein is not eligible for application in a 102(a) rejection. The statute reads in pertinent part:

> A person shall be entitled to a patent unless --
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent.[1]

The present application is a division of US patent application 09/195,099 filed on November 18, 1998. Therefore, the present application has an effective filing date of November 18, 1998, a date that is prior to the date of Kleewein's patent on May 11, 1999. Therefore, Kleewein is not §103(a) art.

The Examiner may have intended to apply 35 U.S.C. §102(e) in the anticipation rejection rather than §102(a). Even if such is the case, Kleewein does not disclose all the limitations recited in pending independent claims 16, 20, and 23, particularly as amended.

[1] 35 U.S.C. §102(a).

Applicant notes that anticipation requires the disclosure, in a prior art reference, of each and every limitation as set forth in the claims.[2] There must be no difference between the claimed invention and reference disclosure for an anticipation rejection under 35 U.S.C. §102.[3] To properly anticipate a claim, the reference must teach every element of the claim.[4] "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference".[5] "The identical invention must be shown in as complete detail as is contained in the ...claim."[6] In determining anticipation, no claim limitation may be ignored.[7] The applied art fails to meet this threshold, particularly with respect to independent claims 16, 20, and 23

Discussion of and Distinctions over Kleewein

Applicants respectfully disagree with the Examiner's assertion that Kleewein discloses a column exclusion means in col.4 lines 36-39.

A merge-join procedure is for joining an outer table and an inner table. For example, such procedure is for extracting matching data from columns specified in accordance with a join condition between two tables A and B, and showing the extracted data in a single view.

The merge-join operation is mentioned in col.4 lines 36-39 of Kleewein, in which, in order to extract data items "1, 6, 9 and 10" from two joined tables, by listing data items 1, 6, 9 and 10 in an SQL query, only matching data items 1, 6, 9 and 10 in an outer table are returned, and the other data are not extracted. The related explanation is provided in col.6 lines 38-43 and col.6 line 60 to col.7 line 45 with the examples shown.

In an example discussed in col.6 line 60 to col.7 line 45 of Kleewein, data items 1, 2, 5, 6 are stored in column 1 of the inner table O_T1. In a merge-join, if an "IN" predicate in the SQL

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[2] *Titanium Metals Corp. v. Banner*, 227 USPQ 773 (Fed. Cir. 1985).
[3] *Scripps Clinic and Research Foundation v. Genentech, Inc.*, 18 USPQ2d 1001 (Fed. Cir. 1991).
[4] *See* MPEP § 2131.
[5] *Verdegaal Bros. v. Union Oil Co. of Calif.*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).
[6] *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

statement is like: "Select C1 from S_T1 where C1 in ('1','2','5', '6')", matching data '2' and '6' are fetched among data items stored in Column 1 of the outer table S_T1.

Further, if a "BETWEEN" predicate in the SQL statement is like: "Select C1 from S_T1 where C1 between '1' and '6'", matching data '2' '3' '4' '6' are fetched among data items stored in Column 1 of the outer table S_T1.

That is, the merge-join operation is for extracting and joining only required data items (i.e., "LOW") in tables. It excludes only "LOW", but not "COLUMN".

In contrast to Kleewein, the present application has a feature that a minimum required number of columns or tables are stored in a memory. Specifically, unnecessary "COLUMN" not used for SQL statement in joined tables and tables including only unnecessary "COLUMN" are not saved in the memory.

As described in the "Description of the Related Art" section of the specification, in the conventional DB system, when "COLUMN" necessary for a join between tables is specified, all table including the specified "COLUMN" are extracted and joined. All real data of all joined tables are read into the memory. Accordingly, many tables are read more than required, which prolongs the processing time, and the memory area of the computer is wasted

The present invention has a feature that only tables having necessary "COLUMN" are extracted to create a virtual table. By reducing a number of columns or tables to be joined, a compact virtual table is obtained, and retrieval processing for the compact virtual table can be performed at high speed with a minimum required memory capacity.

In order to achieve this, in the present invention, "COLUMN" and tables which can be judged to be unnecessary are excluded from objects to be joined, even if specified as object of merge-join.

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[7] *Pac-Tex, Inc. v. Amerace Corp.*, 14 USPQ2d 187 (Fed. Cir. 1990).

In Fig. 1 of the present invention, for example, three real tables A, B, C are joined based on a relationship between key columns a1, b1, and c1. Generally, in view X, nine columns x1 to x9 are arranged in a memory. However, in subsequent retrieval, if some of columns x1 to x9 are used, retrieval of remaining columns results in a waste of memory and low search performance. For example, if only columns x1, x4, x8 and x9 are used for data retrieval, other five columns are not used. In the present invention, as in Figs. 10 to 13, the real tables constituting columns x2, X3, x5, x6 and x7 are excluded from columns to be joined, and eventually, as shown in Fig. 13, a virtual table is formed only by column a4 on real table A, and columns c1, c2, and c3 on real table C.

Namely, columns a2 and a3 on real table A are not read, furthermore, since no column on real table B is needed to be read, real table B itself is excluded from tables to be joined.

Kleewein fails to disclose, teach, or suggest that "COLUMN" and tables are excluded from objects to be joined, but merely teaches that only necessary "LOW" is extracted. Kleewein also fails to disclose that a virtual table is created and data is retrieved from the virtual table in subsequent retrieval processing.

Accordingly, the present claims should not be rejected under 35 U.S.C. 102 based on Kleewein.

Specific Deficiencies of Kleewein

In particular, the applied art does not disclose a database system which searches a plurality of tables joined by a relational database which includes, among other features, "...table joining ***means for creating a virtual table*** by joining the columns that store data to be retrieved of the tables extracted in turn by said table extraction means without being excluded by said column exclusion means, when the processing of said table extraction means and the processing of said column exclusion means have been repeated until all the columns including data to be retrieved are analyzed", as recited in independent claim 16, as amended.

Further, the applied art does not disclose a method of data retrieval from a database, which includes, among other features, "...excluding identical data upon search ***by creating a virtual table*** by joining columns that store data to be retrieved of a plurality of tables using a relational database in such a manner that one table including columns that store data to be retrieved is extracted from the plurality of tables, columns which store the same data contents as data contents of columns on the extracted table of other tables are excluded, and another table is extracted from the remaining tables, and joining one or more tables extracted in turn", as recited in independent claim 20, as amended.

Finally, the applied art does not disclose a computer-readable recording medium recording a program for making a computer implement, among other functions, "...creating a virtual table by joining the tables extracted in turn when the processing of said two means have been repeated until all the columns including data to be retrieved are analyzed without being excluded by said excluding columns", as recited in independent claim 23, as amended.

Accordingly, since the applied art does not disclose all the claim limitations, reconsideration and allowance of claims 16-24 are respectfully requested.

Unpatentability Rejection over Kleewein in View of Wetterbee

Withdrawal of the rejection of claims 18-19 and 24 under 35 U.S.C. §103(a) as being unpatentable over Kleewein in view of Wetterbee (US 5,937,409) is requested.

At the outset, Applicant notes that, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, ***the prior art reference must teach or suggest all the claim limitations***.[8] Further, the teaching or suggestion to make the claimed combination and the

[8] *See* MPEP §2143 (***emphasis added***).

reasonable expectation of success must both be found in the prior art, not in applicant's disclosure.[9]

Whether or not Wetherbee teaches all of what the Examiner asserts, Wetherbee does not make up for the previously identified deficiencies of Kleewein, discussed above with respect to independent claims 16 and 23 from which claims 18-19 and 24 variously depend.

Accordingly, since the applied art does not teach or suggest all the claim limitations, reconsideration and allowance of claims 18-19 and 24 are respectfully requested.

New Claims

New claims 25-27 have been drafted to avoid the applied art and to further define that which applicants regard as their invention. No new matter is involved with these new claims.

Kleewein does not disclose, teach, or suggest creating a virtual table from plural databases wherein the virtual table does not contain duplicative columnar data as variously claimed.

Consideration and allowance of claims 25-27 are respectfully requested.

Conclusion

In view of the above amendment and remarks, Applicants believe that each of pending claims 16-26 in this application is in immediate condition for allowance. An early indication of the same would be appreciated.

In the event the Examiner believes an interview might serve to advance the prosecution of this application in any way, the undersigned attorney is available at the telephone number indicated below.

[9] *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) and *See* MPEP §2143.

For any fees that are due with this amendment, including fees for extensions of time and excess claims, the Director is hereby authorized to charge any fees or credit any overpayment during the pendency of this application to CBLH Deposit Account No. 22-0185, under Order No. from which the undersigned is authorized to draw.

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Respectfully submitted,

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